

PALEONTOLOGY.—*Some Lower Ordovician monoplacophoran mollusks from Missouri.*¹ ELLIS L. YOCHELSON, U. S. Geological Survey. (Communicated by H. A. Rehder.)

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The discovery of a living representative of monoplacophoran mollusks (*Neopilina galathea*) dredged from deep water off the west coast of Central America (Lemche, 1957, pp. 413–416) has aroused much interest among students of mollusks. Monoplacophorans previously had been known only as fossils in rocks of Cambrian through Devonian age. On the basis of the paired muscle scars found in the fossil shells the Monoplacophora have been interpreted as primitive mollusks that have not undergone torsion (Wenz, 1940; Knight, 1952). The soft anatomy of the Recent species *Neopilina galathea* Lemche, confirms the supposition as to the primitiveness of the group.

At the same time, this discovery has emphasized the need for more study of the fossils. An unexpected feature of the Recent species, not reported from fossil taxa, is an asymmetrical coiled larval shell. Lemche (1957, p. 414) suggests that the Silurian genus *Pilina* Koken was characterized by an asymmetrical nucleus. Unfortunately, he based this opinion on drawing of a specimen which has long been lost, and this important detail cannot be checked.

I have examined the U. S. National Museum and the U. S. Geological Survey collections in the hope of finding some monoplacophorans that would provide information on early growth stages. Three specimens of one species were obtained which give some information on this subject. Specimens of two other species, showing well-preserved muscle scars, were also found. These three species, two of which belong to new genera, are described and figured below.

The collections of the U. S. National Museum contain numerous specimens of the Cambrian monoplacophoran *Scenella* Billings. The muscle scars of one species of the genus have previously been described (Rasetti, 1954). Some Middle Ordovician specimens, particularly types and figured speci-

mens, are also in the collections, as are a few Silurian specimens. Upon preliminary examination, none of these specimens showed either muscle scars or details of the apical area.

During their tenure with the U. S. Geological Survey, the late Drs. E. O. Ulrich and Josiah Bridge obtained numerous Lower Ordovician gastropods for a proposed monographic study. In the course of this work nearly 200 specimens of monoplacophorans were collected from outcrops or were contributed by other institutions. The three species described below are from the Ulrich and Bridge collection.

No previously described species are referred to the new genera described below. Most North American monoplacophoran species were described between 60 and 70 years ago, and at the time little emphasis was placed on muscle scars by American writers. Thorough monographic treatment of the group, particularly restudy and reillustration of type specimens, is needed.

John W. Koenig, Missouri Geological Survey, provided information regarding the fossil localities. I am indebted to Dr. J. Brookes Knight for his ideas regarding the significance of these specimens. Photographs were taken by Nelson W. Shupe of the U. S. Geological Survey.

Class AMPHINEURA

Order MONOPLACOPHORA

Family TRYBLIDIIDAE

Subfamily TRYBLIDIINAE

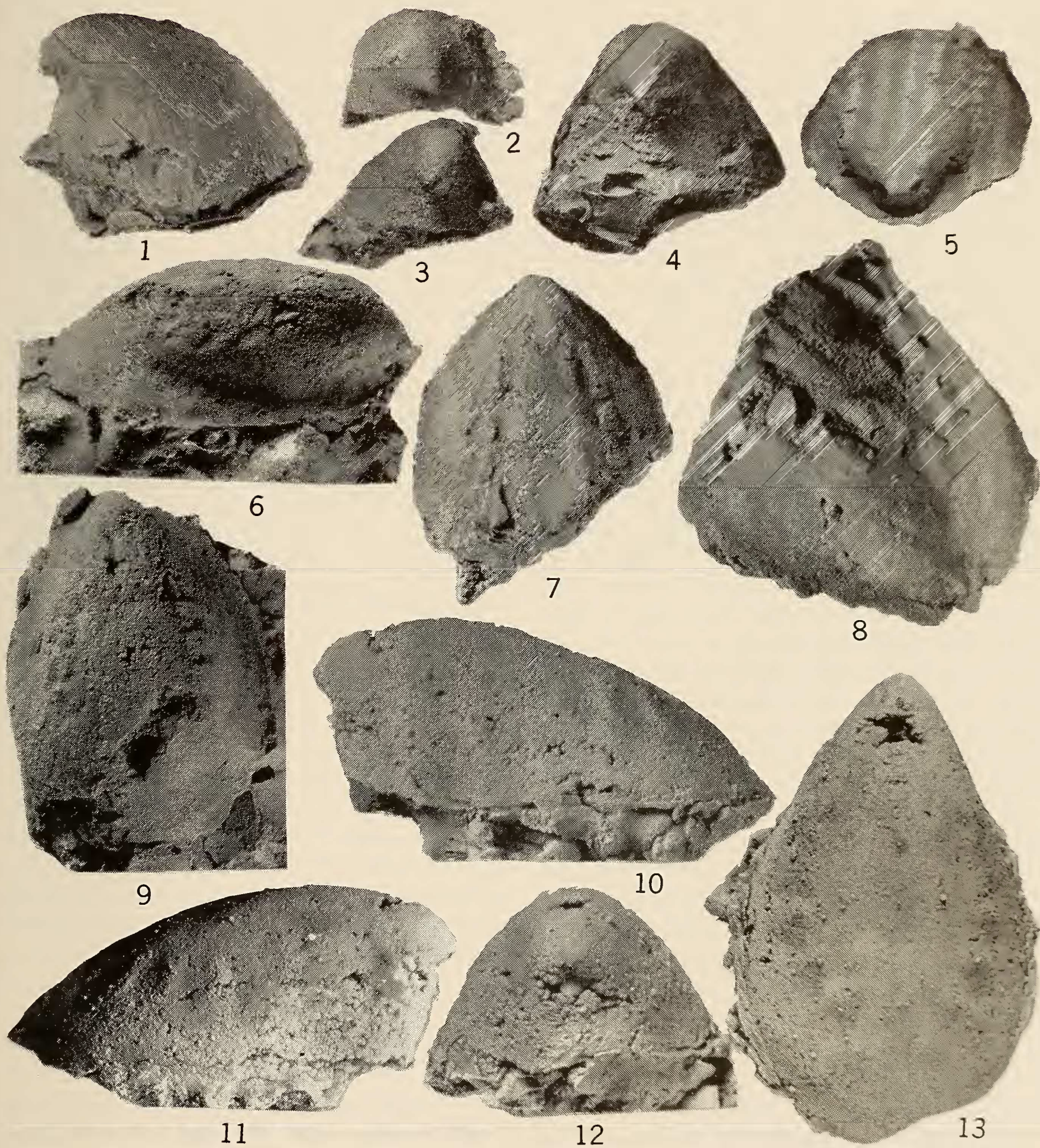
Cyrtoneilopsis Yochelson, n. gen.

Type species.—*Cyrtoneilopsis huzzahensis* Yochelson, n. sp.

Diagnosis.—Deep, cap-shaped monoplacophorans with a strongly curved asymmetrical apex not projecting far over anterior; dorsum smoothly curved; muscle scars unknown; shell and ornament unknown.

Discussion.—When these specimens were discovered in the collections, I was unable to place

¹ Publication authorized by the Director of the U.S. Geological Survey.



FIGS. 1-4.—*Cyrtonellopsis huzzahensis*, n. gen., n. sp.: 1, Right side view of holotype, U.S.N.M. no. 135181; 2, apical view of paratype, U.S.N.M. no. 135182; 3, apical view of paratype, U.S.N.M. no. 135183; 4, apical view of holotype.

FIGS. 5-9.—*Bipulvina croftsae*, n. gen., n. sp.: 5, Oblique top view of holotype, U.S.N.M. no. 135184; 6, side view of paratype, U.S.N.M. no. 135185a; 7, top view of holotype; 8, oblique side view of holotype showing bifurcation of apex; 9, top view of paratype.

FIGS. 10-13.—*Proplina cornutaformis* (Walcott): 10, Right side view of plesiotype, U.S.N.M. no. 135186a; 11, left side view of plesiotype; 12, apical view of plesiotype; 13, top view of plesiotype.

All figures twice natural size, except 2 (natural size) and 8 (three times natural size).

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POST-SHOT YIELD MEASUREMENT OF AEC UNDERGROUND NUCLEAR TEST

The Atomic Energy Commission has reported the resultant yield of the deep underground nuclear test conducted at the AEC Nevada Test Site in September 1957 as 1.7 kilotons.

The shot was detonated at 09 hours 59 minutes 59.45 seconds Pacific Daylight Time (16:59:59.45 GCT) on September 19, 1957, at the end of a tunnel about 2,000 feet long dug horizontally into the side of a mesa at the northern edge of the Yucca Basin. The explosion took place in a layer of volcanic tuff. The coordinates of the detonation point are: latitude 37°11'44.8", longitude

116°12'11.3", elevation 6,615 feet above mean sea level. The vertical distance from the detonation point to the mesa surface is 899 feet, and the slant distance to the side of the mesa is approximately 800 feet.

Post-shot investigation of the tunnel and surrounding area confirms that the explosion was contained and that no radioactive materials escaped into the surrounding air. A detailed study of the area and the local effects of the detonation is in progress.

PALEONTOLOGY.—*Hedbergella*, a new name for a Cretaceous planktonic foraminiferal genus. PAUL BRÖNNIMANN, Esso Standard Oil, S. A., Habana, AND NOEL K. BROWN, JR., Gulf Oil Corporation, New York. (Communicated by H. A. Rehder.)

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The generic name *Hedbergina* was introduced by Brönnimann and Brown (1956, p. 529) for a group of planktonic Foraminifera ranging in age from Aptian or Albian to Cenomanian. *Globigerina seminolensis* Harlton was thought to be representative of this group and was originally designated the type species of *Hedbergina*. Although Harlton's figures of the holotype of *G. seminolensis* (1927, pl. 5, fig. 7a, b) seem to give a true likeness of the group, later examination of this specimen at the U. S. National Museum has shown that it is not typical of the group for which Brönnimann and Brown (idem, pp. 529, 530) intended their name *Hedbergina* to represent. The holotype is so unlike Harlton's deceptive figures that it may not even be the specimen which he originally figured. The holotype does in fact, as noted previously by Plummer (1945, p. 264), resemble quite closely *Globigerina cretacea* d'Orbigny. It has a relatively large umbilicus and may have possessed an umbilical cover-plate which was later broken away.

Harlton (idem, p. 25) originally stated that the type locality of *G. seminolensis* was the Pennsylvanian Glenn formation, about 4 miles north of Ardmore, Carter County, Okla. However, Tomlinson (1929, p. 78) questioned the correctness of this and other localities supplied by Harlton. Later Harlton (1929, p. 308) admitted these errors but did not completely rectify them. Plummer (idem, p. 264), who examined the holotype of *G. seminolensis* was of the opinion that it was not "a convincing Pennsylvanian faunal member." Inasmuch as Comanchean (Aptian to Cenomanian) strata crop out in and around the town of Ardmore, Brönnimann and Brown (idem, p. 530) believed Harlton's species to be a Comanchean form. We now believe, judging from the morphology of the holotype, that *G. seminolensis* is a younger Cretaceous fossil.

In spite of our intention, *G. seminolensis*, represented by its holotype as this specimen is now known to be, was originally, though

inadvertently, designated the type species of *Hedbergina*; and for this reason the designation is binding and must be followed. Although our definition of *Hedbergina* is now known not to refer to *Hedbergina*, it still applies to the group of fossils for which that name was unfortunately introduced, and for which we now propose the new name *Hedbergella*. The definition of *Hedbergella*, n. name, which is the same as that previously given by Brönnimann and Brown (idem, p. 529) for *Hedbergina*, is as follows:

The smooth- to rough-walled, calcareous hyaline test is trochospirally coiled. Its small early chambers are globular, inflated, and globigerine-like. The last few chambers are elongated and extend into a relatively small umbilicus. The aperture is rounded, interiomarginal, and opens into the umbilicus. Short apertural flaps extend into the umbilicus but do not form an umbilical cover-plate.

Remarks.—The most characteristic feature of *Hedbergella*, n. name, is the extension of the last few chambers into the umbilicus. This represents a stage in the phylogeny from a *Globigerina*-like form with a tight umbilicus to *Ticinella* Reichel with a large umbilicus and umbilical cover-plate. In this lineage the enlarging umbilicus was at first minimized by extension of the last few chambers as a whole into it as represented by *Hedbergella*. Later in the lineage the umbilicus became too large to be filled in by the chambers themselves. However, by extending only the apertural flaps, and not the chambers as a whole, the large umbilicus was covered by an umbilical cover-plate composed of extended apertural flaps as represented by *Ticinella*.

Reichel (1950, pp. 601–603), Hagn (1952, pp. 769, 770; 1955, pl. 22, fig. 2, pl. 23, fig. 1), and Umiker (1952, pl. 5, fig. 2, Pv; pl. 6, fig. 3, Pv) have referred forms belonging to *Hedbergella*, n. name, to the genus *Pseudovalvulineria* Brotzen (type species: *Rosalina lorneiana* d'Orbigny), but *Hedbergella*, n. name, differs from this genus in possessing early globigerine-like chambers and a rounded aperture.

Globigerina infracretacea Glaessner seems to belong to the genus *Hedbergella*, but this is not easily ascertained since Glaessner (1937, p. 28, text-fig. 1) only figured dorsal and peripheral views of his species. However, Subbotina (1953, pl. 1, figs. 5-10) has presented excellent figures of specimens of *G. infracretacea*. In the ventral views of her figures the chambers themselves are seen to extend into the umbilicus, thus indicating that *G. infracretacea* should be allocated to *Hedbergella*.

"*Anomalina* sp. aff. *lorneyana* (d'Orb.) typ." of Montanaro Gallitelli (1947, p. 194, text-fig. 1, no. 18a, b) is either a *Hedbergella* or *Ticinella*, but one cannot tell which since she did not figure a ventral view.

The type species of *Hedbergella*, n. name, is here designated *Anomalina lorneiana* var. *trocoidea* Gandolfi. This form is raised to the rank of species and described below as *Hedbergella trocoidea* (Gandolfi).

***Hedbergella trocoidea* (Gandolfi)**

Fig. 1, a-c

1942. *Anomalina lorneiana* (not d'Orbigny) GANDOLFI, Riv. Ital. Paleont., anno 48, mem. 4: p. 98, pl. 4, figs. 1, 19; pl. 8, fig. 2; pl. 13, figs. 1a, b, 4a, b.
1942. *Anomalina lorneiana* var. *trocoidea* GANDOLFI, idem, p. 99, pl. 2, fig. 1a-c; pl. 4, figs. 2, 3; pl. 13, figs. 2a, b, 5a, b.
1951. *Anomalina lorneiana* d'Orb. var. *trocoidea* Gandolfi, NOTH, Geol. Bundesanstalt, Jahrb., Sonderbd. 3: 80, pl. 4, figs. 27a, b, 28a, b.
1952. *Pseudovalvulineria* sp., UMIKER, Univ. Bern, Geol. Inst., Diss., pl. 5, fig. 2(Pv); pl. 6, fig. 3(Pv).
1952. *Pseudovalvulineria trocoidea* (Gandolfi), HAGN, Erdöl und Kohle 5: text-figs. 1 (part), 2 (part).
1955. *Pseudovalvulineria trocoidea* (Gandolfi), HAGN, Internat. Sedimentary Petrogr. Ser. 1: pl. 22, fig. 2 (part); pl. 23, fig. 1 (part).
1956. *Hedbergina seminolensis* (not Harlton), BRÖNNIMANN and BROWN, Eclogae geol. Helv. 48: 592, pl. 20, figs. 4-6.
- Not *Globigerina seminolensis* HARLTON, 1927, Journ. Pal. 1: p. 24, pl. 5, fig. 7a, b.

Description.—The rather rough-walled, coarsely granular test is low to relatively high trochospirally coiled. Its early chambers are small and globigerine-like. The last whorl is composed of six to eight chambers, the last one or two of which are markedly elongated and extended into a tight umbilicus. The interiomarginal aperture is rounded and opens into the umbilicus. It is

bordered by a short apertural flap.—Brönnimann and Brown's (idem, p. 529) description of *Hedbergina seminolensis* (not Harlton).

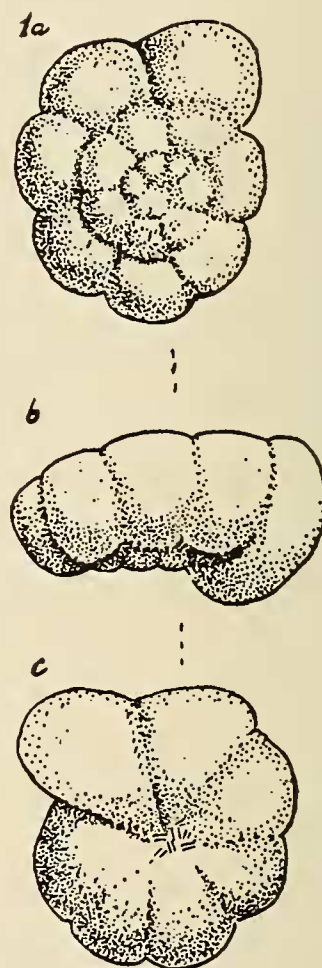


FIG. 1.—*Hedbergella trocoidea* (Gandolfi). Lectotype of *Anomalina lorneiana* var. *trocoidea* Gandolfi. a, dorsal view; b, peripheral view; c, ventral view. $\times 50$. After Gandolfi (1942, pl. 2, fig. 1a-c).

Remarks.—*Anomalina lorneiana* (not d'Orbigny) of Gandolfi (1942, p. 98, pl. 4, figs. 1, 19; pl. 8, fig. 2; pl. 13, figs. 1a, b, 4a, b) is a low-spined form, and *A. lorneiana* var. *trocoidea* Gandolfi is a high-spined form. Such forms seem to represent extremes in the variability of the species. Both forms are included in the same species herein called *Hedbergella trocoidea* (Gandolfi). *Globigerina infracretacea* Glaessner can probably be referred to *Hedbergella*, but it is smaller, though relatively stouter, its walls are smoother, and it possesses fewer chambers in the last whorl than *H. trocoidea*.

Placentula nitida (not Reuss) of Berthelin (1880, p. 69, pl. 27, 4, fig. 11a-c) from the Albion of Montcley, Department of Doubs, France, appears to be a similar form, as noted by Gandolfi (idem, p. 99). However, Bartenstein (1954, p. 49), who restudied the Montcley material, places Berthelin's form in synonymy with *Valvulineria parva* Khan, which is unlike any *Hedbergella*. *Discorbina galiciiana* Friedberg, originally described from beds of supposedly Senonian age near Lwów

(Lemberg) in the Ukraine (formerly south-eastern Poland), may also represent a *Hedbergella*.

In raising the rank of this form from variety to species, we have retained Gandolfi's varietal name as the specific name. In Gandolfi's paper the spelling of this name where printer's type was used is "*trocoidea*" (idem, p. 99, explanations to pls. 2, 13). His spelling of the name where drafted letters were used is "*trochoidea*" (idem, text-fig. 49, pl. 4). Although "*trocoidea*" is probably the intended spelling, this is not certain. According to the Copenhagen Decisions on Zoological Nomenclature (Hemming, ed., 1953, pp. 43-44), "Where there was more than one Original Spelling and in the case of none of these spellings was there clear evidence that it was the result of an inadvertent error, the *Valid Original Spelling* is that one of the Original Spellings used by the *First Subsequent User* of the name." Reichel (idem, pp. 601, 603) appears to have been the first user (other than nomenclators, e.g., the *Zoölogical Record*, Thalmann's *Indexes to new genera, species and varieties of Foraminifera*, and Ellis and Messina's *Catalogue of Foraminifera*) of Gandolfi's name, but he also used the two spellings. Noth (1951, p. 80) was the next user of Gandolfi's name which he spelled "*trocoidea*." We regard Noth's usage as the valid spelling.

No holotype of *Anomalina lorneiana* var. *trocoidea* was originally designated or indicated by Gandolfi. The specimen Gandolfi (idem, pl. 2, fig. 1a-c) illustrated as "*Anomalina lorneiana* d'Orbigny *trocoidea* n. var. Breggia, strato 14, 50X." is herein designated lectotype. Gandolfi's original figure of this specimen is reproduced here as Fig. 1a-c.

The lectotype of "*Anomalina lorneiana* var. *trocoidea* Gandolfi" is deposited in the collections of the Institute of Geology and Paleontology, University of Basel, Switzerland.

The type locality of *Hedbergella trocoidea* (Gandolfi) is the lower part of the *Scaglia variegata* (Aptian or Albian), bed 14, about 35 m above the top of the Barremian Biancone limestone, in the gorge of Breggia River, northeast of Balerna, near Chiasso, Canton Ticino, southeastern Switzerland.

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ENTOMOLOGY.—*Venomous moths and butterflies.* HOWARD F. ALLARD and
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LARVAE WITH VENOMOUS HAIRS OR SETAE

The larvae of a number of species of moths and butterflies are known to bear venomous hairs or setae. The following may be mentioned:

Lagoa rispata (fam. Megalopygidae). This is a common eastern species, the caterpillars feeding upon the leaves of oak, elm, apple, raspberry, and various shrubs. These are fleshy and furnished with a dense coat of long, silky, brown hairs which project upward and meet to form a ridge or crest along the median dorsal line. Among these fine hairs venomous setae occur.

Sabine stimulea (fam. Limacodidae, by some authors termed the Cochlidiidae and by others the Eucleidae). These are known as the slug-caterpillar moths. *Sabine stimulea* is the saddle-back caterpillar, feeding on oaks and other forest trees. The larva is characterized by a green patch on the back resembling a saddlecloth, the saddle being represented by an oval purplish brown spot. The moth is dark reddish brown in color with two white dots near the apex of the fore wings.

The spiny oak slug (*Euclea delphinii*) is another common species feeding on oak, pear, willow, and other trees.

Automeris io (fam. Saturniidae) (Giant silkworms). This is called the io-moth and is a common species in the eastern part of the United States. It is characterized by large conspicuous eye spots on the hind wings. The larvae, armed with particularly venomous spines arranged in tufts, are green, with a broad brown or reddish-white edged stripe on either side of the abdomen, and the spines are tipped with black. This is a common species, and the junior author, in his boyhood, was well acquainted with this caterpillar and often deliberately touched the spines of the caterpillars against the tender skin of the arms or fingers to note the venomous reactions. Frequently, too, he sometimes inadvertently came in contact with them, usually while

cutting or shocking corn, and was at once made aware of their presence by a burning sensation followed by more or less temporary redness or swelling.

The maia-moth, *Hemileuca maia*, is also a member of the same family Saturniidae. It is the only species of the genus in the eastern United States and is not particularly common. The larvae feed upon the leaves of the oak, are brownish black with a lateral yellow stripe, and each segment is armed with large, branching, venomous spines.

Browntail moth, *Euproctis chrysorrhoea* (fam. Lymantriidae, or Lipariidae). The tussock moths. This is a European pest introduced first into Massachusetts at some unknown date, but in 1897 its ravages came to notice, and the species since has spread over much of New England, and into Nova Scotia, New Brunswick, and other areas. The larvae are more or less social in behavior, fastening leaves together with silk as shelters in which they pass the winter. They are nearly black in general coloration, and are clothed with brownish, barbed hairs, borne on the subdorsal and lateral tubercles. These hairs are venomous and in contact with the human skin, produce an inflammation similar to that of poison ivy. Even the cast spines of the larvae are readily blown about by the wind, the venomous hairs causing much discomfort.

ADULT INSECTS WITH VENOMOUS
HAIRS OR SETAE

It is perhaps less generally known that the hairs or setae of the adult moths and butterflies, in some parts of the world, may also produce great discomfort, as troublesome irritations or inflammation in contact with the skin of tender areas of the human body. In this country the hairs of the adult insects of the browntail moth are known to be of this character.

In some parts of the world, especially in